Natural Gas....An Alternative Fuel for Airport Terminals?

The Clean Airport Summit

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Denver, Colorado

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Gas Research Institute



Airports as Emission Sources*

	Smog Source	
Airport		Polluters
LAX	2	Chevron &
		Arco Refineries
	5	
		Power Plant
JFK	6	Power Plant
LaGuardia	8	Power Plant
DC National	4	Incinerator
	6	Incinerator

*Natural Resources Defense Council



Airport Terminals' Energy Applications

- Appliances
- Equipment
- Food Service
- Lighting
- Space Heating, Ventilation & Cooling
- Transportation
- Water Heating



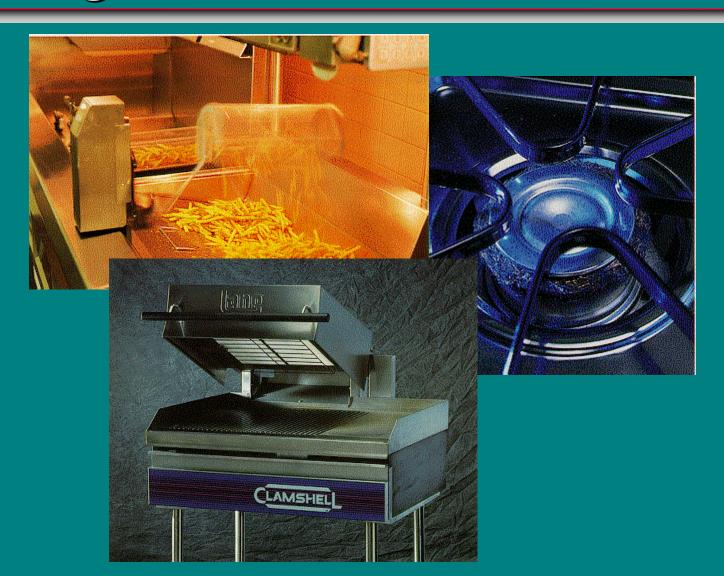
Natural Gas Product Design Criteria

Provide Customer Value

- ✓ Competitive Costs (Initial & Operational)
- ✓ Low Emissions (CO; NMHC; NOx; PM)
- ✓ Enhanced Safety
- ✓ Easy to Install, Maintain & Operate
- ✓ Reliability/Durability
- ✓ Flexible
- √ Compact



Food Service at Airports "Cooking with Natural Gas"





Food Service at Airports "Cooking with Natural Gas"

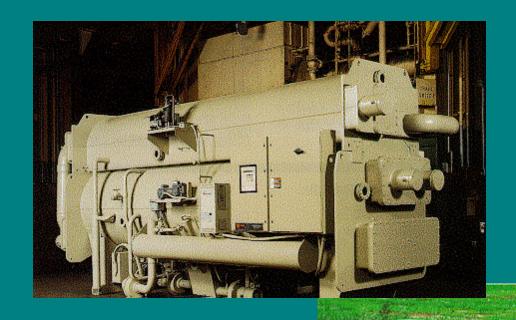
- Pizza
- Hot Sandwiches
- Burger/Hot Dog/Fry
- Cookie/Bakery
- Chicken
- Seafood
- Oriental Dishes
- Pasta

- Griddles
- Broilers
- Fryers
- Ovens
 - ✓ Reconstitution
 - ✓ Convection
 - ✓ Combi
- Cook Tops

State-of-the-Art Equipment Automation and Intelligence



Space Heating, Ventilation & Cooling with Natural Gas at Airports

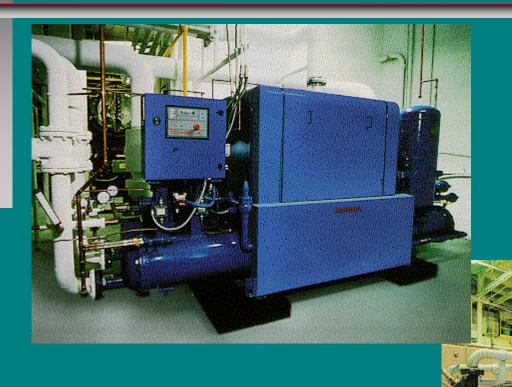


Trane Horizon

Trane IntelliPak



Space Heating, Ventilation & Cooling with Natural Gas at Airports





Space Heating, Ventilation & Cooling with Natural Gas at Airports

- Heating Systems to Handle All Loads
 - ✓ Direct
 - ✓ Heat Recovery Options
- Ventilation Air/Desiccants Systems
- Cooling Systems
 - ✓ Engine Drive Packages: 50 3000 Tons
 - ✓ Absorption Systems: 100 2000 Tons
- Hybrid Systems



Water Heating with Natural Gas at Airports

- Potable Applications
- Process Applications
- Dish/Utensil Washing
- JanitorialApplications





Airport Fleets Operating on Natural Gas



Shuttle Buses

Fueling On and Off the Road

Vehicles





Airport Fleets Operating on Natural Gas



Luggage Tugs



Airport Fleets

- Security
- Fueling
- Tugs (aircraft and luggage)
- Maintenance
 - ✓ Airfield, Aircraft, and Building
- Housekeeping
- Waste Management

- Catering
- Concession Suppliers
- Lift Trucks
- Airlines
- Taxi/Limo Services
- Parking Lot Shuttles
- Rental Cars



Summary

- Natural Gas Products
 - ✓ Least-Cost Energy Service Analysis
 - ✓ Meeting or Out-Performing the Most Stringent Emission Standards
- Today's Natural Gas Cooling Viable Option
 - ✓ Now Captures ~9% of the Applied Market
 - ✓ Available from All Major Equipment Suppliers
- Natural Gas Vehicles A Clear Difference
 - ✓ Lower Emission Advantage
 - ✓ Lower Fuel Prices

